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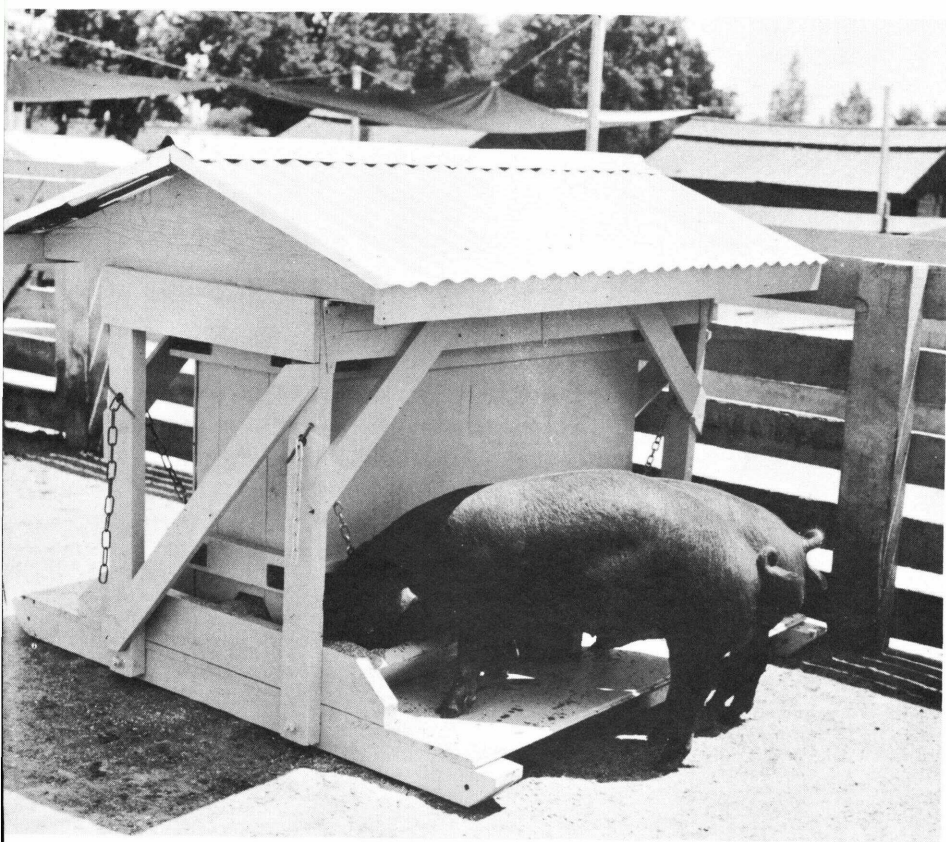
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HOG-LOT EQUIPMENT



Farmers' Bulletin 2192
U.S. DEPARTMENT OF AGRICULTURE

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HOG-LOT EQUIPMENT

By J. H. ZELLER, *Animal Husbandry Research Division*,¹ and T. E. BOND, *Agricultural Engineering Research Division, Agricultural Research Service*, and G. M. PETERSEN, *Agricultural Engineering Department, University of Nebraska*²

Profitable swine production requires sound management, which includes the use of suitable equipment for feeding and handling the animals.

FEED TROUGH

Feed troughs are generally made of wood and are V-shaped or flat-bottomed in design.

The flat-bottom trough offers these advantages: It is not easily overturned; it can be used to feed slop, ground feed, and any kind of grain except ear corn; it can be filled with slop without interference from the hogs; and it is easier to keep free of accumulations of feed and mud.

¹ Retired April 30, 1962.

² This publication is based on results of cooperative research between the Animal Husbandry Research Division and Agricultural Engineering Research Division, Agricultural Research Service, and the State agricultural experiment stations. The Nebraska Agricultural Experiment Station has recorded this publication as No. 1287 in its Journal Series.

Figure 1 shows construction of the flat-bottom trough. Length can vary according to the number of hogs to be fed.

A feed trough that is not cleaned regularly and thoroughly can become insanitary in a short time, especially when slop is fed. Clean a trough daily before any remaining slop sours. A slight dusting of slaked lime will help keep it in good condition.

Various types of metal troughs are on the market. Metal troughs are usually easier to clean and to keep clean than wooden ones. However, lightweight metal troughs overturn more easily than wooden ones and tend to rust through or wear out rather rapidly.

FEEDING FLOORS

Grain should be fed to hogs on a feeding floor or platform. Feeding grain on the ground is wasteful and unsanitary.

A concrete floor or platform is more satisfactory than a wooden one. Wooden platforms serve the pur-

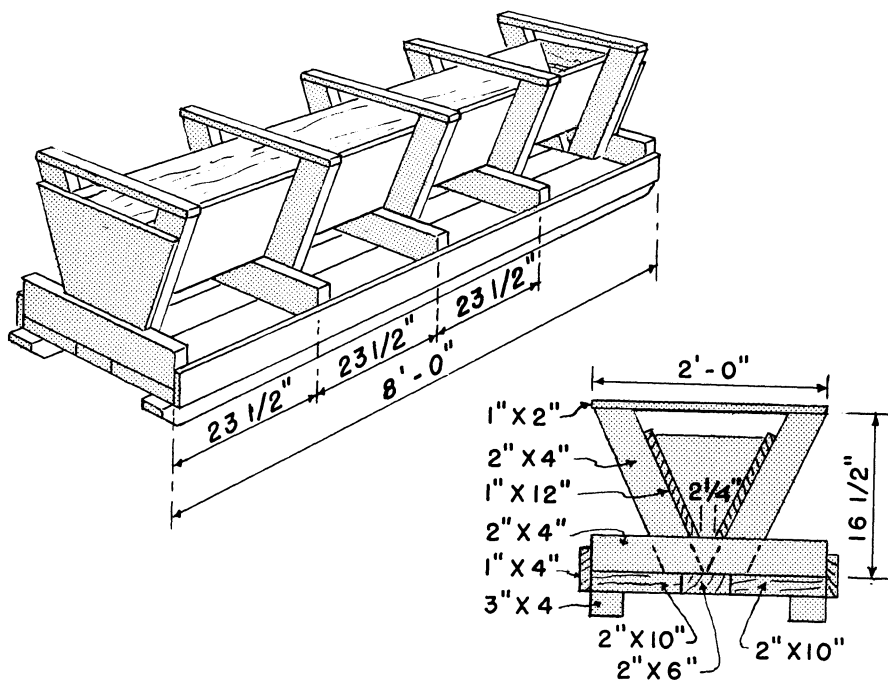


Figure 1.—Flat-bottomed feed trough.

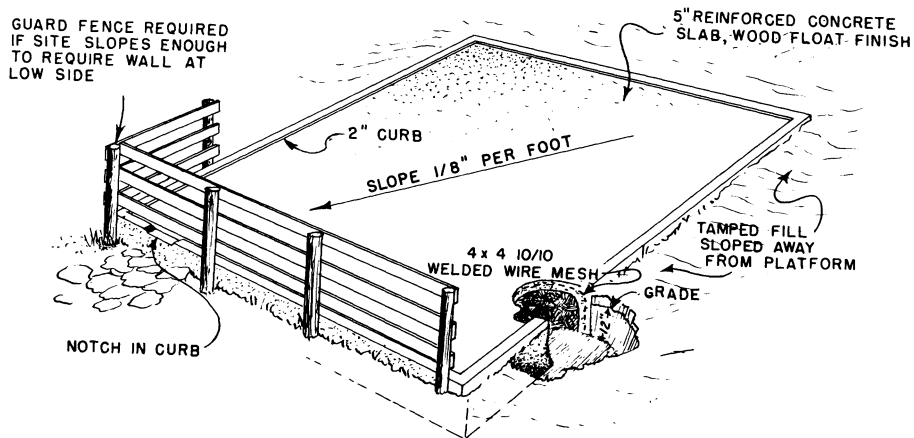


Figure 2.—Concrete feeding floor.

pose for a time, but they become insanitary, soon rot out, and generally cost more in the end than a concrete floor.

Figure 2 shows the construction of a concrete feeding floor. The floor slopes about $\frac{1}{8}$ inch per foot to facilitate washing and draining. Its surface should be somewhat rough to prevent the hogs from slipping. The 2-inch curbing around the outside edge prevents the hogs from pushing the grain off while eating.

The floor should be high enough above the ground to prevent water from washing over it during a heavy rain. Approaches must be provided to enable the hogs to get on the floor without difficulty.

This type of floor can also be built to provide a mud-free area around self-feeders.

GARBAGE COOKING AND FEEDING

Sterilizing or cooking garbage to prevent the spread of disease is a legal requirement in almost every State.

Figure 3 shows a good arrangement for a garbage cooking-and-feeding operation. The plan includes:

(1) A ramp (A) for unloading garbage from a collection truck into the cooking truck. The cooking truck should be equipped with

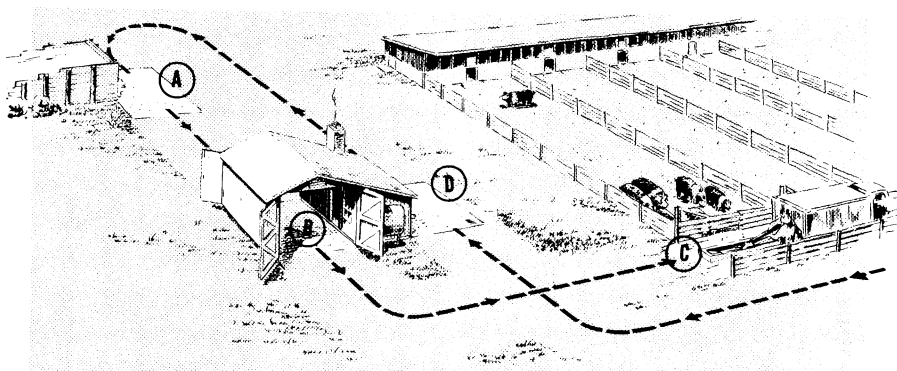
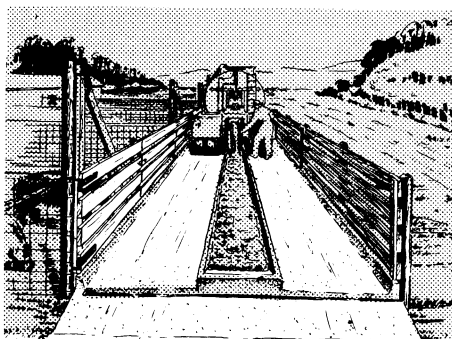


Figure 3.—Above, Plan for garbage cooking and feeding operation. Right, Drive-through alley—C in plan. (Plan Exchange No. 5820.)



a dumping chute, as shown in the illustration.

(2) A cooking shed (*B*), which contains the boiler that provides the steam for cooking the garbage.

(3) A drive-through alley with a feeding trough in the center (*C*). The alley should be 10 feet wide.

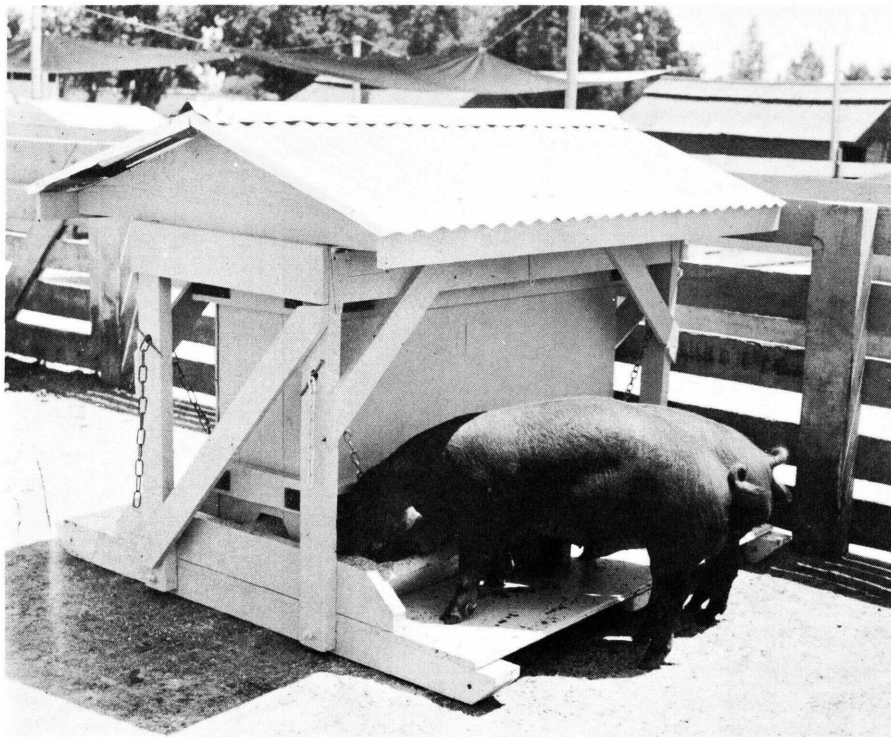
(4) A clean area (*D*) where the cooking truck is washed and cleaned to await arrival of the next collection truck.

Gates between the hog lot and the alley keep the hogs out of the alley during filling and cleaning operations and serve as pen dividers during feeding.

SELF-FEEDERS

Self-feeders that hold several days' supply of feed save much time and labor in feeding hogs. Those designed for filling from outside the feed-lot fence have an additional advantage—feed trucks do not have to enter the lot and, therefore, are less likely to spread diseases. Commercial feed trucks that visit several farms could readily carry diseases from one farm to another.

Good commercial self-feeders of different designs and capacities are available. Plans may be obtained for building the 10-bushel self-feeder



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Figure 4.—A 10-bushel capacity self-feeder. (Plan Exchange No. 5814.)

shown in figure 4 and others with capacities up to 1,000 bushels.

FEED-CONVEYING EQUIPMENT³

The hog finishing operation requires the greatest amount of feed handling. A mechanized feeding system (fig. 5) can eliminate much of the labor. Feed handling in this phase of hog production is usually the easiest to mechanize, because the hogs are usually confined to a relatively small area where self-feeders, feed troughs, or feeding floors can be arranged "in-line" or in simple geometric patterns so as to require a minimum amount of conveying equipment.

In selecting or planning a feed-conveying system, keep these points in mind:

- A continuous flow of feed from *storage* to *mixer* to *grinder* to

³ Additional information may be found in Farmers' Bulletin 2198, "Automatic Feeding Equipment for Livestock and Poultry."

ground-feed storage to *feeding units* is usually considered best.

Consequently, the feed storage and mixing area should be located near the area of greatest feed requirement—the hog finishing area.

- The ground-feed storage bin is usually the weakest link in a continuous-flow feeding system. Ground feed tends to compact in storage and bridge during discharge, which can impede unloading by gravity. To reduce bridging, the bin should have at least one straight side, with a hopper angle of 60° or more. A bin with three straight sides would be preferable. Positive feed with a screw-feeder, or auger, is more dependable than gravity feed.

- Screw augers, flight or belt conveyors, and pneumatic conveyors—or combinations of these—are most commonly used as conveying units.

Augers, including portable units, are available in many different sizes. Four- to 12-inch augers are commonly used for conveying materials on farms. Capacity of these augers ranges from 50 to 1,500 pounds per

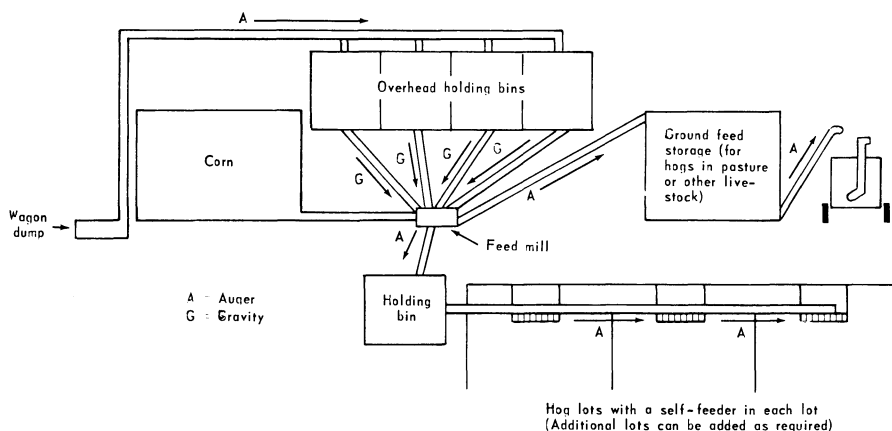


Figure 5.—Mechanized feeding system for hogs.

minute, the capacity depending on the size, operating speed, and conveying angle of the auger and on the kind of material conveyed. Generally, a single run for an auger is kept below 100 feet. Augers are not very satisfactory for conveying ear corn.

Flight or belt conveyors are usually the least expensive type of conveyor and have the lowest power requirements. They are also available in a wide range of sizes. They have a maximum conveying angle of about 45° and can have single runs of 200 to 300 feet. Portable models are available.

Pneumatic conveyors usually require more power than other types, but pneumatic conveying is a very versatile method and is not restricted to straight runs.

Where the arrangement of buildings or the location of feeding areas makes it impractical to install a continuous-flow feeding system, self-

unloading wagons (fig. 6) will be useful in distributing the feed. These wagons are available in sizes ranging from 60 to 450 bushels capacity. Some are designed for mixing feed as well as for distributing it. Small hand or motor-driven carts are also available for distributing feed.

HAY RACK

A well-constructed hay-feeding rack, such as the one shown in figure 7, prevents the hogs from trampling and soiling the hay and reduces the waste of hay and leaves. Hay and leaves that drop off as the hogs pull the hay out between the slats fall into the trough at the bottom of the rack.

SHADES

Hogs suffer greatly from heat and must have shade. They should have as much shade as it is practical

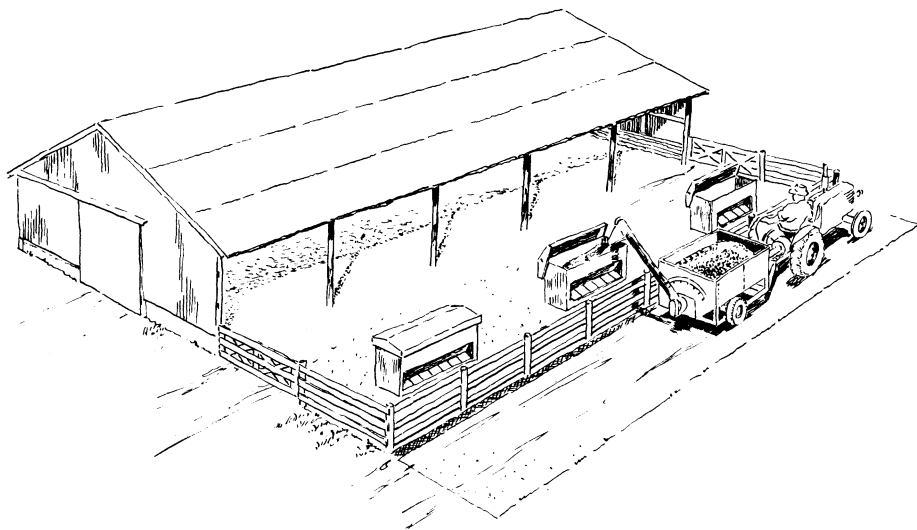


Figure 6.—Two-wheel self-unloading wagon.

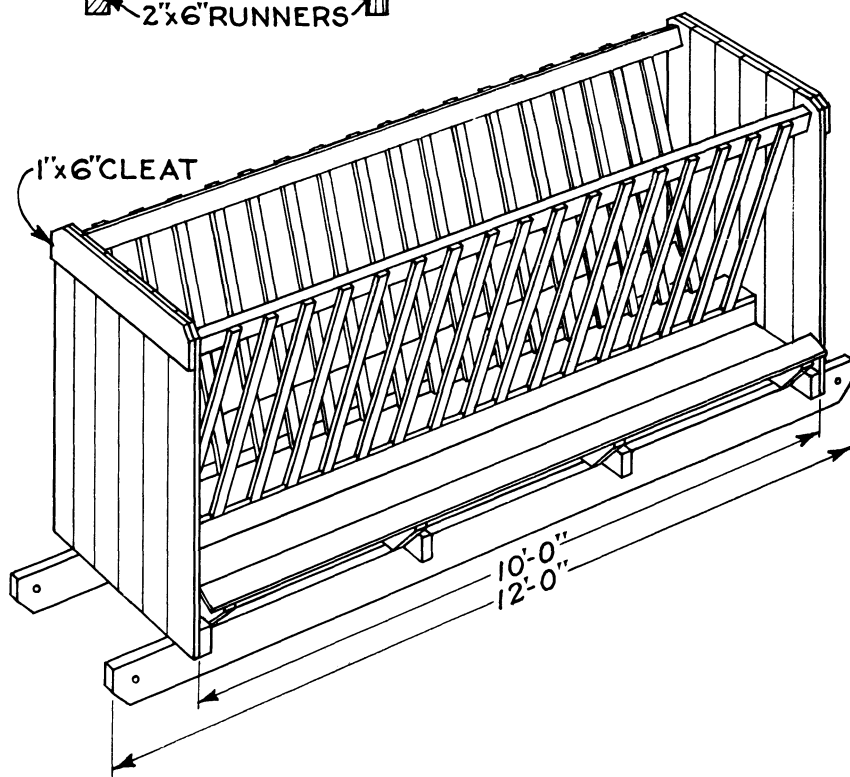
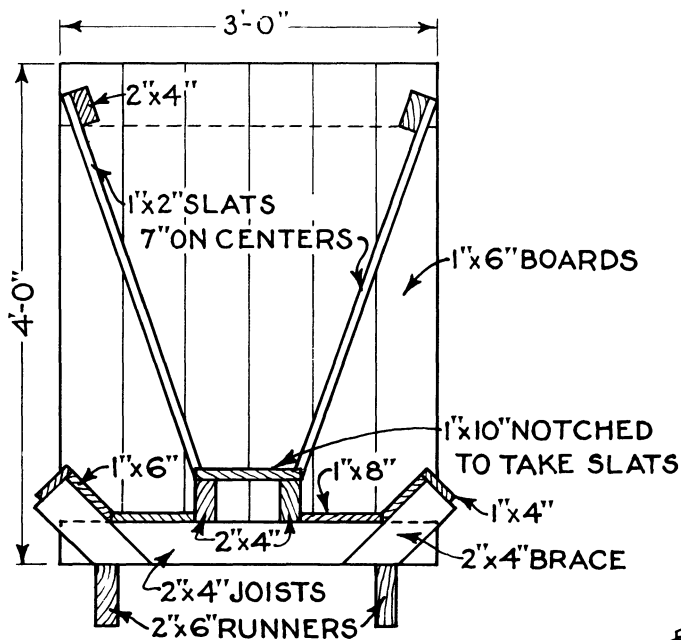


Figure 7.—Hay feeding rack.

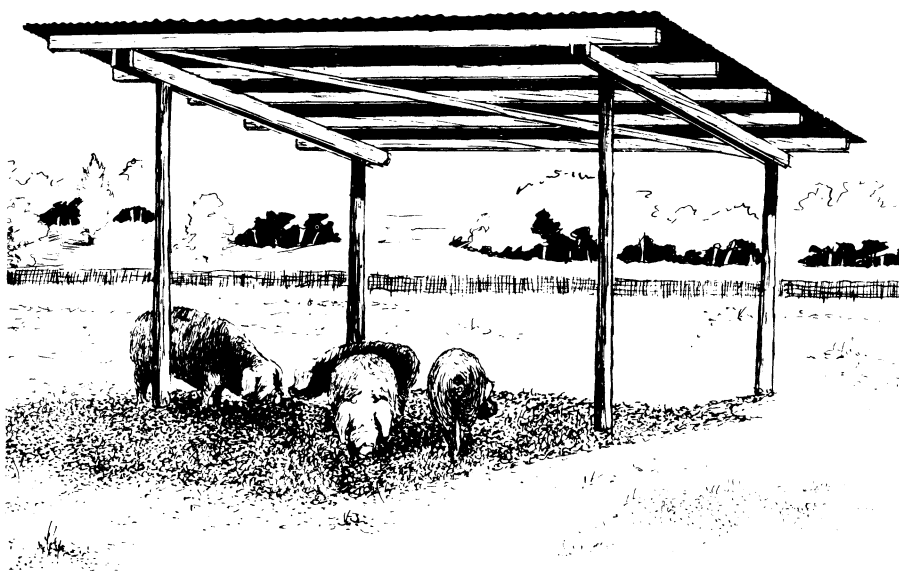
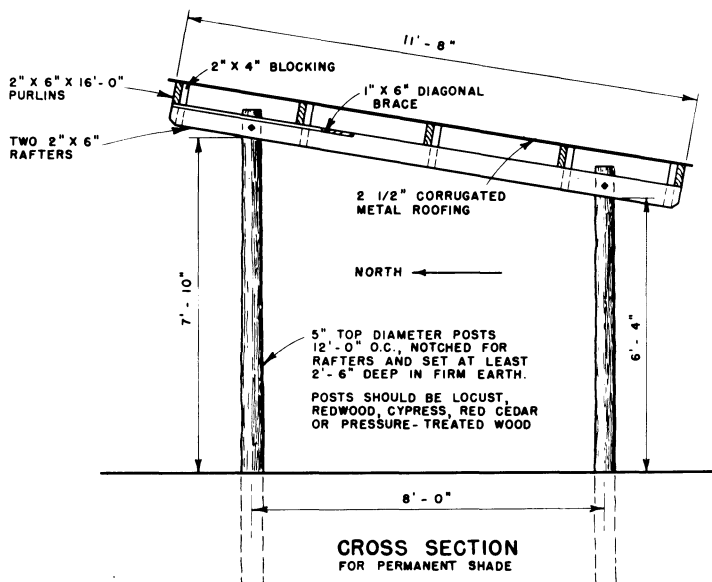
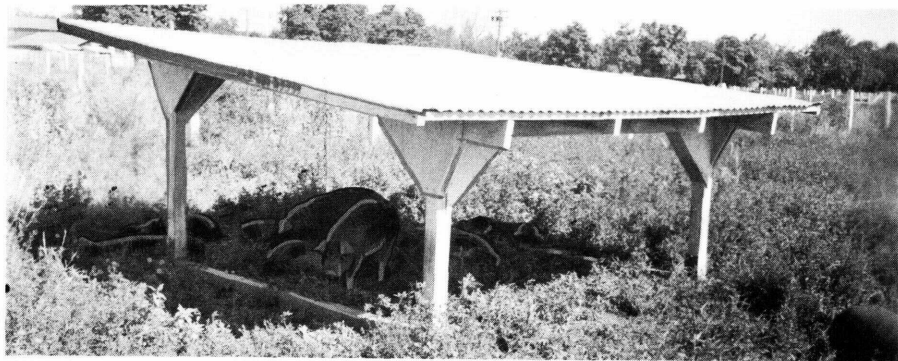


Figure 8.—Permanent-type hog shade and construction details—
12 by 16 feet.



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Figure 9.—Portable-type shade. (Plan Exchange No. 5870.)

to provide. A hog weighing 100 pounds or more requires at least 12 square feet of shade area; 15 square feet would be better.

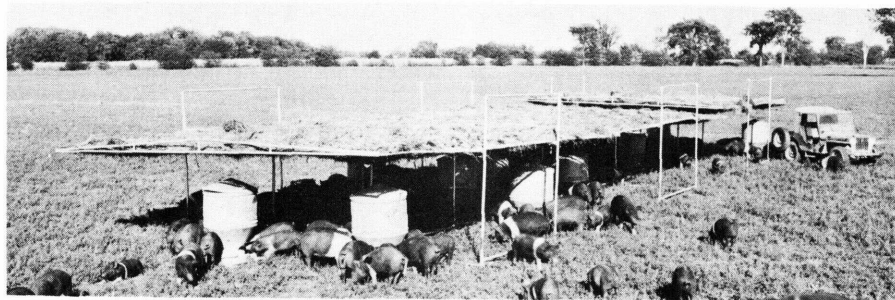
Trees provide good shade, but are not always available where needed. A 4- to 6-inch layer of hay supported by a framework of poles and chicken wire netting provides “cool” shade, but makes neither a permanent nor a weatherproof structure.

Figures 8 and 9 show two convenient shades—a permanent and a portable type. The shades should be at least 4 feet high to permit good passage of air over the hogs. Painting the metal roofing white on the topside and black on the underside

will increase the heat radiation of the metal and provide a cooler shade.

Shades should not be located near objects that radiate or reflect heat. Dark buildings, heavy wood fences, bare ground, asphalt, and concrete exposed to the sun will radiate heat to hogs under nearby shade; white-painted and shiny-metal buildings will reflect heat. Open pasture is an ideal location for shades. A shade positioned with its long axis east to west will cast a shadow for the longest period of time.

A good practice is to shade the feeding area as shown in figure 10. The lightweight, portable, hay shade



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Figure 10.—A portable, lightweight, hay shade covering a feeding area. (Courtesy of *Better Farming*.)

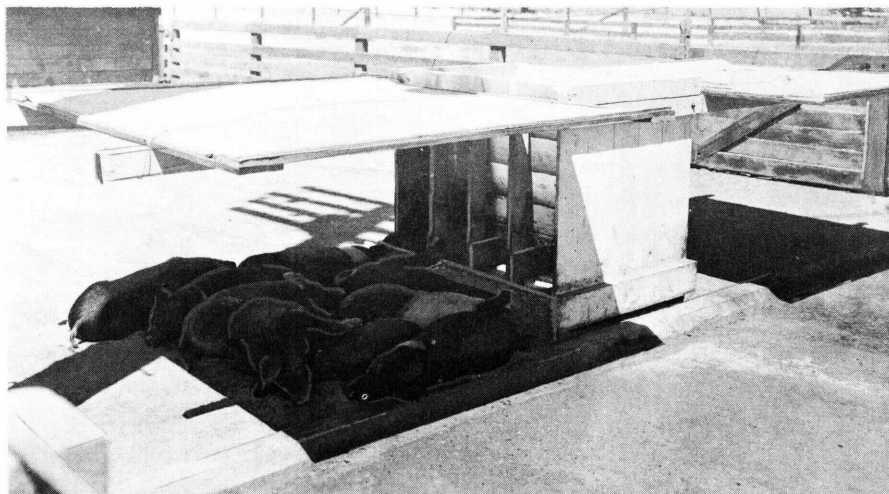


Figure 11.—Shaded self-feeder.

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should be high enough to permit good air movement and easy filling of the self-feeders. An alternate method of shading a feeding area is to attach small shades to self-feeders as shown in figure 11.

Temporary shades can be quickly and easily made with any one of the numerous types of plastic-film material available, as shown in figure 12.

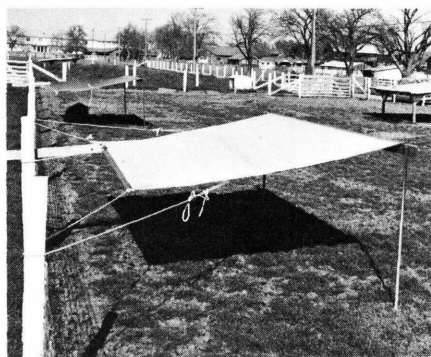


Figure 12.—Temporary shade made of plastic-film material.

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DIPPING VAT AND OILERS

Crude petroleum oil is commonly used to control hog lice on swine. Methods of applying the oil include dipping vat, mechanical oiler, and spraying.

Dipping Vat

A dipping vat is a convenient means of treating a large number of hogs. The hogs pass through the vat, which contains water with a film of oil over its surface. The water makes it unsafe to use vats in the northern part of the country during cold weather.

Dipping vats are usually made of concrete or galvanized iron. Concrete is the best material to use.

Figure 13 shows construction of a concrete vat that includes two holding pens and a draining pen. The bottom and the sidewalls of the vat should be 4 to 6 inches thick,

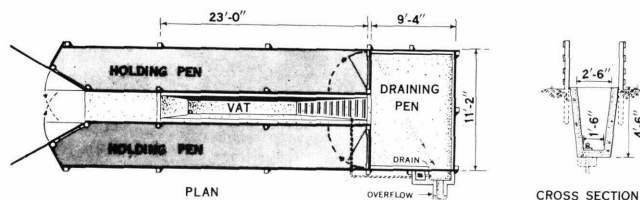
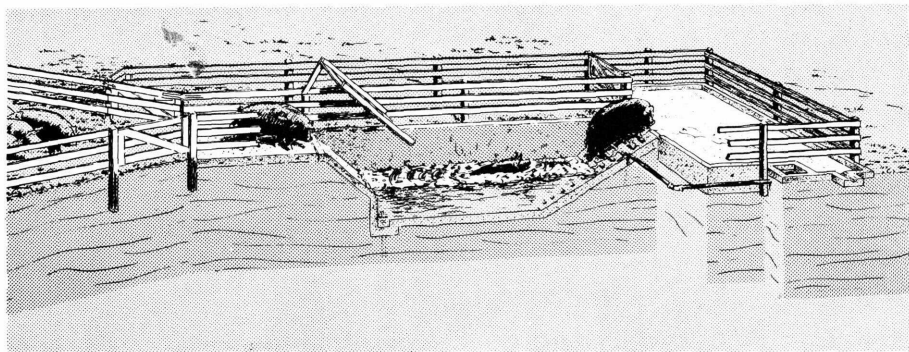


Figure 13.—Dipping vat. (Plan Exchange No. 5390.)

and the bottom should rest on well-tamped earth. Inside dimensions should be: Depth, $4\frac{1}{2}$ feet; bottom length, 10 feet or more; bottom width, $1\frac{1}{2}$ feet; top width, $2\frac{1}{2}$ feet.

A roof over the front end of the vat prevents the hogs from jumping in and splashing out the liquid. The rear end should slope 20° to 25° , and should be slatted so that the hogs can climb out easily.

Install a drain at the lowest point of the bottom to facilitate draining and cleaning.

Oilers

Various types of mechanical oilers are on the market. Most consist of a container, which holds from 2 to 4 quarts of oil, and some type of oil-discharge mechanism. When the hog rubs against the mechanism, the oil is discharged from the con-

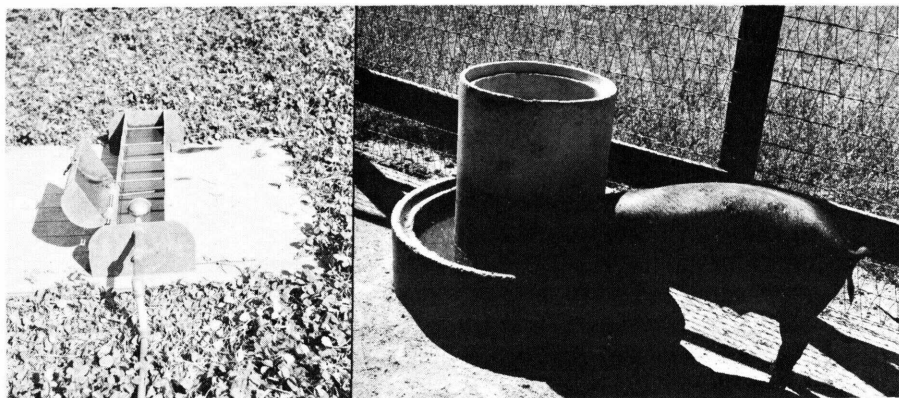
tainer. For satisfactory service from mechanical oilers, the container must be kept filled and the oil-discharge openings in the container must be kept open.

An oiler can be made by tying old cloths or sacks to a post and saturating them with oil. This type requires close attention to keep enough oil on the cloth for effective service. You can fasten a gallon can of oil to the top of the post, and punch a small hole in the bottom of the can so that oil will fall on the cloths drop by drop to keep them saturated.

WATERERS

Hogs should have a plentiful supply of clean drinking water at all times.

Automatic waterers insure a con-



BN 17665

Figure 14.—Hog waterers.

stant supply of fresh water and eliminate the work of hauling or carrying the water. Electrically heated automatic waterers insure a constant supply of water even in freezing weather.

Various types and sizes of automatic waterers are available. Float-controlled trough-type waterers (fig. 14) can handle about twenty 100-pound hogs per 12-inch length. (For hand watering, 12

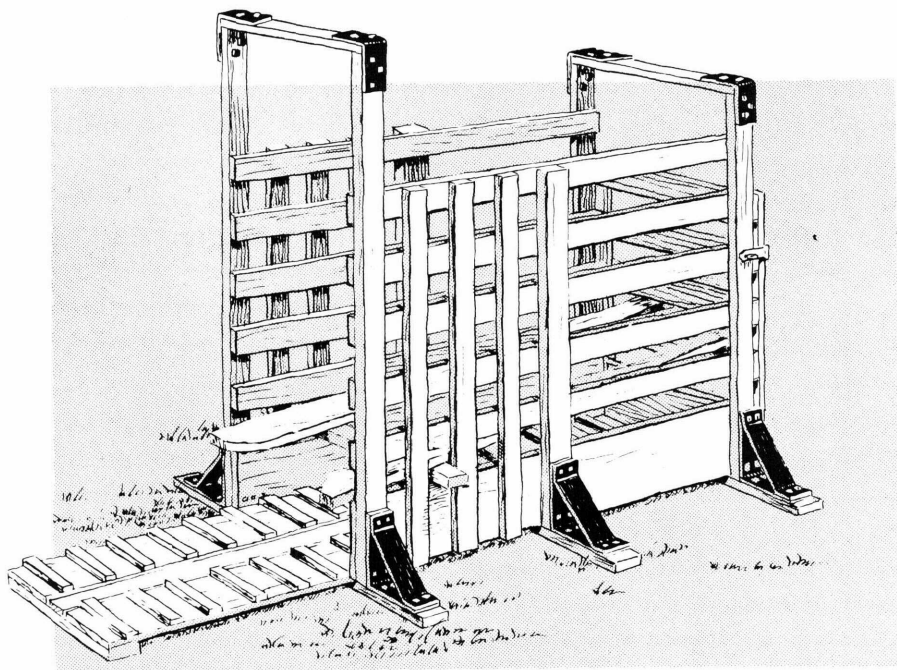


Figure 15.—Breeding crate. (Plan Exchange No. 5783.)

inches of trough space is required for each hog.) One cup of a cup-type waterer can also handle about 20 hogs. Cup-type waterers are available for use with gravity or pressure water systems.

Additional information about automatic waterers, including electrically heated waterers, may be obtained from equipment dealers or by writing to the U.S. Department of Agriculture, Washington, D.C. 20250.

BREEDING CRATE

Mature boars are often so large that they cannot mate with young sows unless a breeding crate is used.

Figure 15 shows a suitable breeding crate. The floor is about 9 feet long and is slatted to prevent the hogs from slipping. The front of the crate is a hinged gate (fig. 16, *A*), which may be opened to let the sow out after service. When the sow is in the crate, a 2- by 4-inch bar is placed behind her to prevent her from backing out. Two- by

6-inch or 2- by 8-inch planks on each side of the sow support the front feet of the boar during service. (Bar and planks are shown in the illustration.)

A breeding crate can be used to confine hogs for other purposes, such as medical treatment. A headgate (fig. 16, *B* or *C*) can be installed at the front of the crate to hold the animal's head.

HURDLE

A hurdle is almost indispensable in driving and handling hogs, especially individual hogs. It can also protect the herdsman when he is handling mature boars. A hinged hurdle—two small hurdles fastened together with strap hinges—is very useful in cutting out one hog from a bunch.

Figure 17 shows a suitable hurdle. Plywood or tempered hardboard of the dimensions shown meet the requirements for a strong, lightweight material.

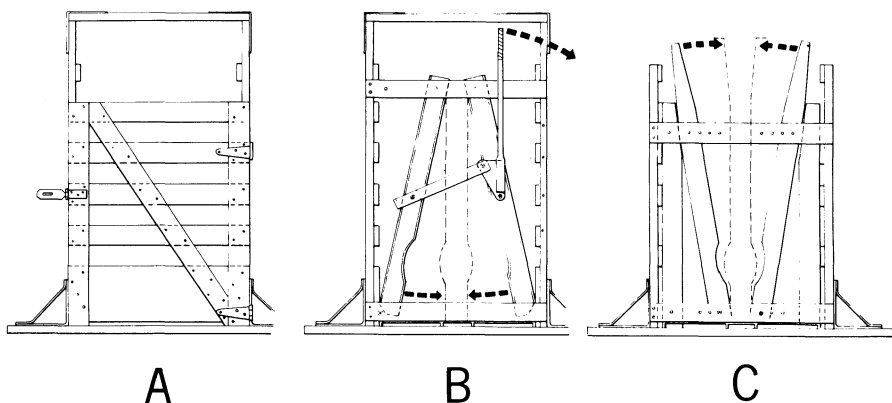


Figure 16.—Endgate and headgates for breeding crate.

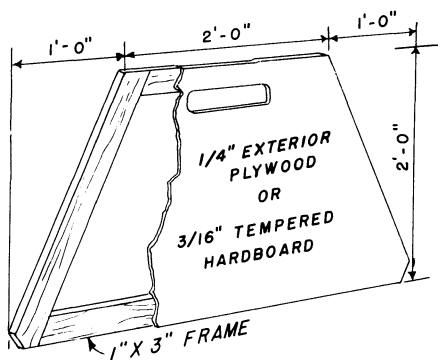


Figure 17.—Lightweight hurdle.

LOADING CHUTE

Every hog farm should have a good loading chute, either a movable or a permanent type. The chute should be built for use with a small yard or pen.

Figure 18 shows a movable-type chute and construction details. Figure 19 shows three methods of constructing a permanent-type chute.

A chute should have a gradual incline. Hogs are not easily driven up or down a chute that rises or declines abruptly. A chute 20 feet long has a satisfactory incline when one end rests on level ground and the other on the bed of a farm truck.

Maximum width recommended for the chute is $3\frac{1}{2}$ feet. A chute that is too wide permits the hogs to turn around. A gate at the loading end will prevent the hog from backing out of the chute. Since a swinging gate cannot be built close to the floor, it is less suitable for handling small pigs than one that slides up and down.

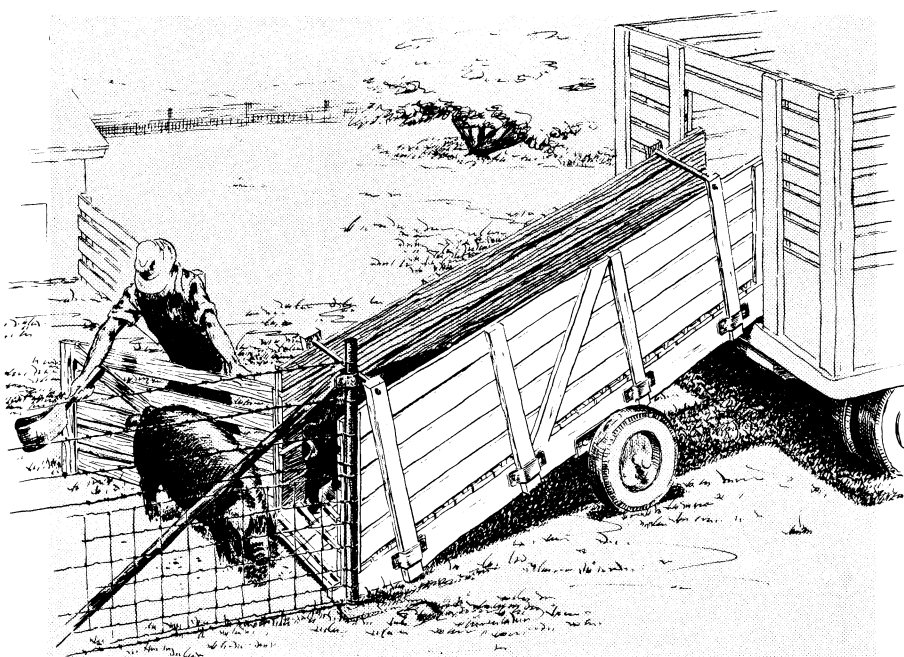


Figure 18.—Movable loading chute. (Plan Exchange No. 5798.)

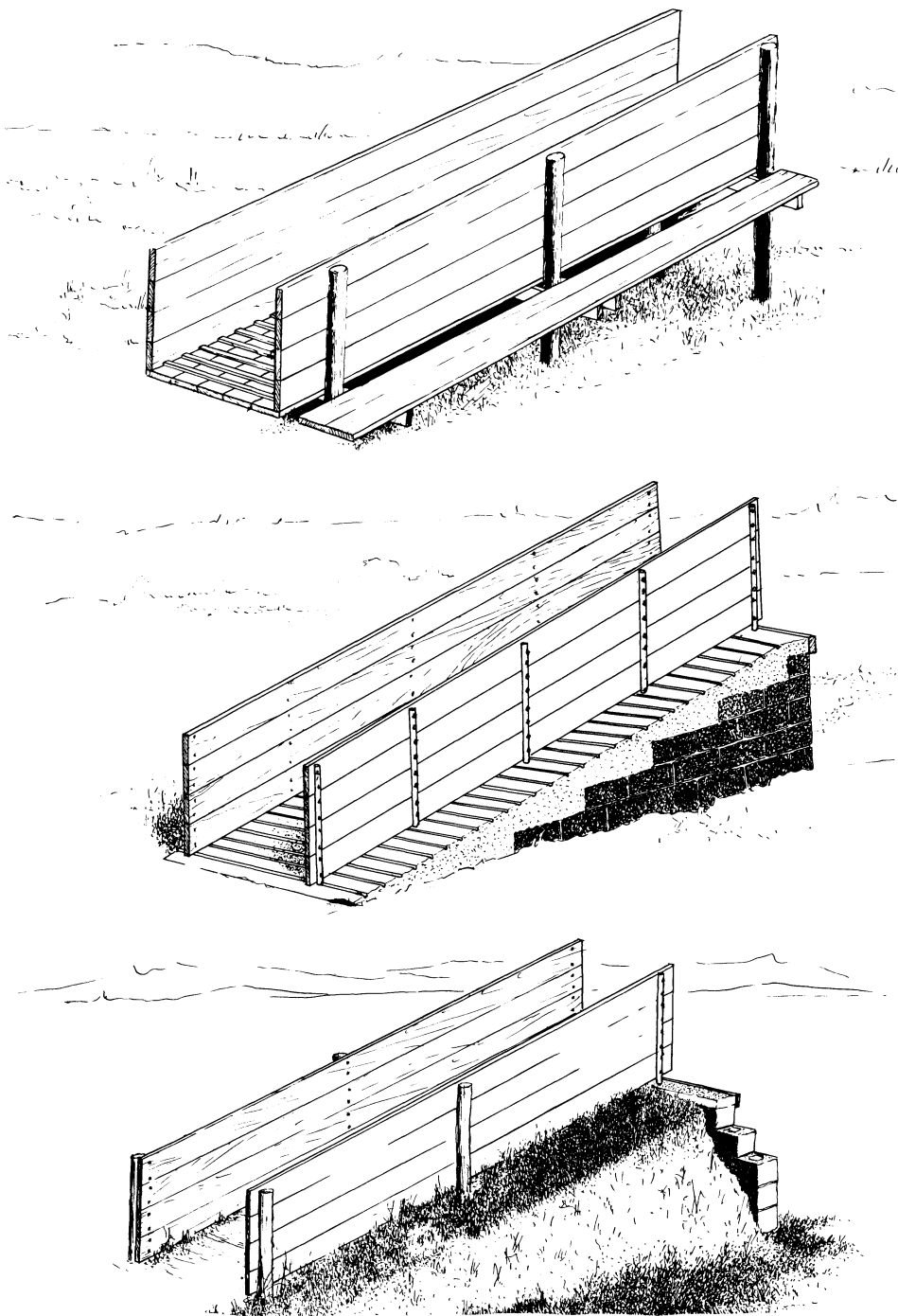


Figure 19.—Three methods of building a permanent-type loading chute.

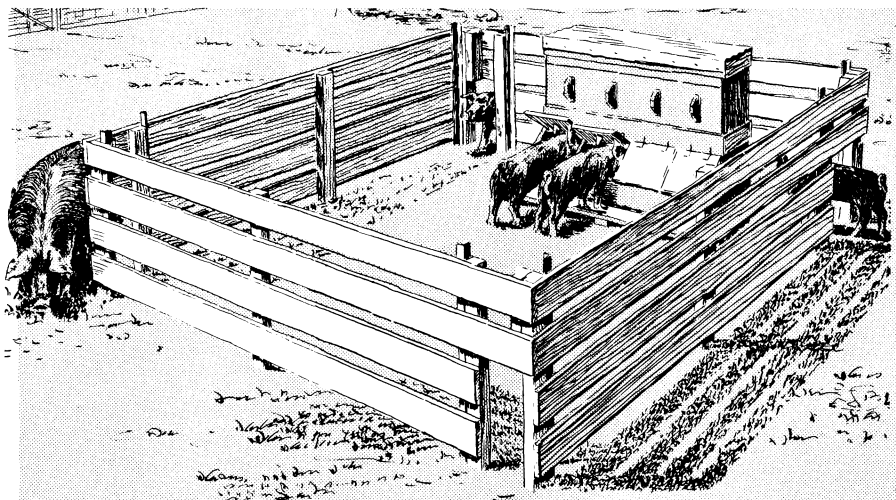


Figure 20.—Creep feeder. (Plan Exchange No. 5827.)

CREEP FEEDER

Young pigs are usually started on feed when they are about 3 weeks old. The feed should be placed in a pen, or a creep, where the larger pigs cannot reach it.

Figure 20 shows a suitable creep enclosing a self-feeder. A creep should have two or more entrances, wide enough for the small pigs but too narrow for the larger pigs. The entrances should be high enough for the pigs to walk through. If they have to crawl into the creep continually, they may develop low backs—a condition that can reduce their market or breeding value.

WALLOWES

Wallowes provide hogs with much-needed relief in hot weather.

Concrete or metal wallows are recommended, because it is impossible to keep a mud wallow sanitary.

Figure 21 shows construction of a concrete wallow. This wallow is 16 feet long and 10 feet wide. It will accommodate six to twelve sows, or fifteen to twenty 200-pound hogs, or twenty-five to twenty-eight 100-pound hogs at one time.

A water depth of 4 inches should be sufficient. The drain plug at the low end of the wallow facilitates draining and cleaning. The wallow should be shaded.

SCALES

Suitable scales for weighing hogs and feed are necessary in order to keep accurate production records.

Figure 22 shows the arrangement of a platform scale and weighing crate. The crate must be substantially constructed to hold the hog while it is being weighed.

Portable scales of 500-pound capacity may be adequate on small hog farms. On large farms, per-

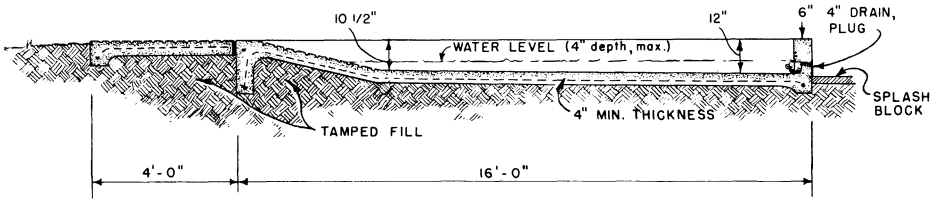
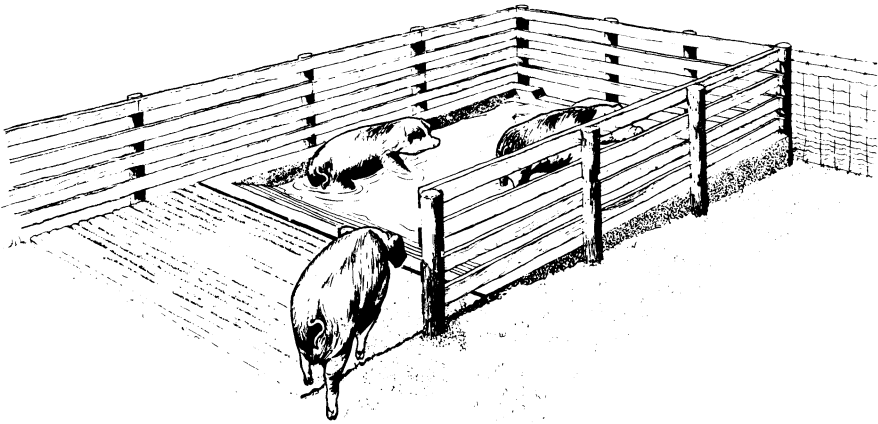


Figure 21.—Concrete hog wallow. (Plan Exchange No. 5842.)

manently installed scales of 1,000-pound capacity or more may be preferable.

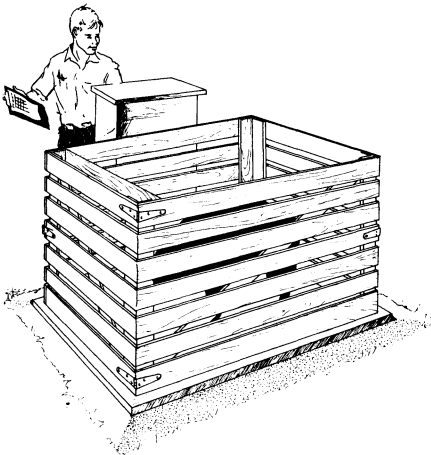


Figure 22.—Platform scale.

SHIPPING CRATE

Figure 23 shows construction details of a shipping crate strong enough and large enough to hold a hog weighing up to 200 pounds. Sound, rough boards 1 inch thick should be used for the crate floor.

Sound construction of a shipping crate is essential to prevent accidents in transit.

SOURCES OF PLANS

Blueprints of plans suitable for a particular locality may be obtained through your State extension service. County agents or farm advisers usually have catalogs illustrating available plans and can aid in selecting and obtaining them. Plans are also available from lumber

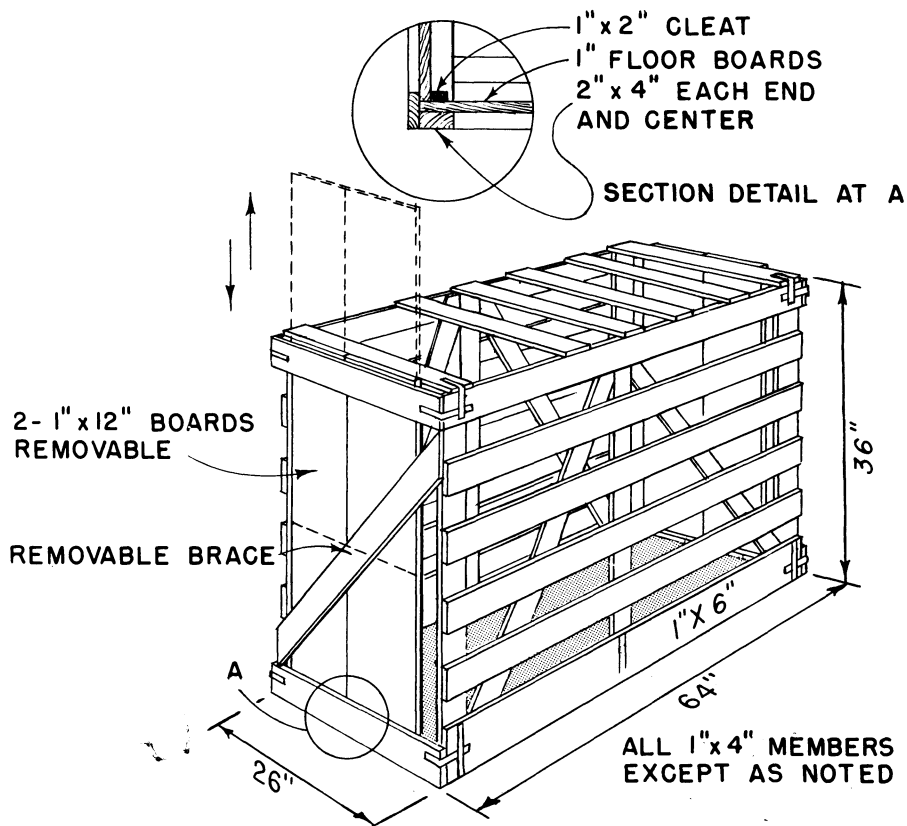


Figure 23.—Shipping crate.

and hardware dealers and other commercial organizations.

Working drawings of illustrated equipment which carry a Cooperative Farm Building Plan Exchange

number in the legend under the illustration may be obtained from most State extension services by requesting the plan exchange number.